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EDITORIAL

The Relation of the Clinic and Laboratory

THE ward, the laboratory of the surgical clinic, has developed slowly after many setbacks into a complicated organization, composed of many activities which aid in the diagnosis of disease and aim at the determination of the specific causes of the disease. Garrison notes that the first five paragraphs of the Hippocratic Tract Iatreion (The Surgery) outline the administration of a rudimentary surgical clinic. The following statement is found in paragraph five. "The place for instruments is by the operator's hand, but if an assistant hands the instruments, let him be ready a little beforehand and act when you bid him. Let those who look after the patient present the part for operation as you want it and hold fast the part for operation so as to be all steady, keeping silence and obeying their superior."

The early descriptions of the clinic emphasize the manual side of surgery. The auxiliary sciences which contribute so much to the diagnosis and indications for treatment were attached but slowly to the surgical clinic.

Proper ward facilities have come relatively slowly. The first clinical instruction in medicine came into being during the first half of the eighteenth

century at Leyden under Boerhaave. Van Swieten carried it to Vienna. Under his orders the University Clinic was established at the Municipal Hospital on October 6, 1753, and then for various reasons the clinic was transferred on October 19, 1776, to the United Spanish National and Holy Trinity Hospital on the Rennweg, where at the same time a surgical clinic was established. Special mention of the founding of this surgical clinic is made, but nothing is said of its later activities.

It is difficult to determine when surgical and medical patients were first separated. In 1785, when Desault was called to the Hotel Dieu, six beds were reserved for surgical patients. He established a clinical school, and in this an amphitheater was built. Though married and possessed of a home Desault slept at the Hotel Dieu so that he might care for the sick at night. He was the first to make rounds in the morning. Bichat records that his clinic began with a public consultation to which charity patients were admitted. Desault took the history, pointed out the salient features of the case and discussed the indications. Then a careful and detailed history of the interesting patients about to be discharged was given and, when possible, the autopsy findings in patients whose illness had terminated fatally. Daily bedside notes were made on each case, so that the progress might be accurately followed. Operations were then performed in the amphitheater. Desault is generally given credit for having first established clinical instruction in surgery, and having pointed out the value—one should say necessity—of the ward or clinical laboratory in the teaching and understanding of disease.

The renaissance of surgery began with the diffusion of anatomic knowledge. Anatomy still remains one of the foundation stones of surgery. With the development of anatomy as a science, separation of the anatomic laboratory from the surgical clinic became more and more marked. A more intimate relationship should be established, for the anatomic laboratory affords the opportunity for the surgeon to retain the anatomic knowledge once acquired and to secure new knowledge as surgical technic advances into new fields. Bichat's work opened up new fields in normal minute structures, and its application to pathologic conditions opened the field of surgical pathology, the value of which to the surgeon cannot be overestimated, for the surgeon can never render to the patient the best service unless he can correlate the clinical, the gross and the microscopic picture of the disease. The one who is able best to correlate these three pictures, provided he has had sufficient material to observe, becomes the best diagnostician.

Following studies upon the minute changes in organs the seat of pathologic changes, pathologic anatomy developed rapidly; but new studies and methods were coming on apace. Virchow in a prospectus appearing in his *Archiv* (1847) stated that "The ideal we shall strive to realize, as far as it is in our power, is that practical medicine shall become applied theoretical medicine and theoretical medicine shall become pathological physiology. Pathological anatomy and clinical medicine, the justness and independence of which we fully recognize, are essential to us as sources of new questions, the answering of which will fall to pathological physiology." In another

article we find the following, "Pathological physiology takes its questions partly from pathological anatomy, partly from practical medicine; it creates its answers partly from the observations at the bedside, and thus it is a part of clinical medicine, and partly from experiments on animals. The experiment is the ultimate and highest resort in pathological physiology."

These statements apply to surgery as well as to medicine. With the introduction of experimental methods—reproducing lesions in organs like those occurring in disease—an opportunity was given to determine the beginning of symptoms and their sequence and to determine surgical procedures on patients the value of which had been previously determined by experiments. With the introduction of the experimental method, the experimental laboratory became one of the most important adjuncts of the surgical clinic.

Bacteriology has introduced a new technic in the examination of patients which can without difficulty be applied at the bedside. Following the discovery of methods for staining bacteria, the demonstration of the specific bacterium concerned in the production of the disease could often be made at once and a specific diagnosis made. Thus the clinical pictures of specific diseases could be clarified and developed, and the nonspecific cases separated, and only the cases in which the bacteriologic examinations were positive saved for comparative study.

The introduction of the Widal and Wassermann tests gave positive methods upon which the clinic is dependent. The x-ray laboratory has contributed so much to our knowledge of bone diseases that we can recognize the early changes of bone tumors and differentiate neoplastic from inflammatory disease, and has made possible the early positive diagnosis of gastrointestinal and lung lesions. It has made the early diagnosis of diseases of the kidney possible. Encephalography and cholecystography have opened virgin fields. The value of these methods can hardly be estimated. Physiologic methods have revealed changes in blood chemistry which are of inestimable value in the study of disease and determining the course and progress of the same.

A mighty structure has been developed. The ward or clinical laboratory is the copestone of the structure. The patient must have the benefits of any or all of the laboratory procedures which are necessary to arrive at a correct conclusion. The anatomic laboratory must provide the opportunity for the surgeon to perfect himself in anatomy, for the surgeon of today frequently does not possess the minute knowledge of anatomy which the earlier surgeon had. The laboratory of surgical pathology is necessary in order that the surgeon may have the opportunity to visualize lesions, and the experimental laboratory must afford opportunities in the experimental production of disease and the perfection of technical procedures which must be of proved value before they are applied to man.

In spite of these innovations the gross clinical examination of the patient is of prime importance and in the ward the clinician is the chief.

Billroth once said that "most doctors learn routine all too quickly in the course of their practice. He who begins to acquire it as a student becomes so accustomed to superficial examinations, superficial thinking, and

superficial treatment that he is easily spoiled for all serious and penetrative research into a diseased condition. Any quick-thinking person can acquire routine easily and rapidly if he so desires; whereas most persons must be painstakingly trained to careful, meditative, searching thought on the more difficult processes. Thus it is that modern clinical instruction, which is intended to teach how to diagnose a diseased condition, how to observe its course, how, when, and at what point it is to be therapeutically attacked, demands a greater wealth of clinical material in the form of bedside patients. The more so, since the technic of diagnostic examinations is not simply to be demonstrated, but is to be learned by the students and to be practiced by them until they can apply it independently."

The patient and the clinician occupy the center of the stage of clinical surgery, and the physical examination gives data which must be accurately assembled to arrive at a diagnosis. The auxiliary departments must be called upon, but not indiscriminately. The indiscriminate use of the different departments accounts in part for the high cost of medical care. The history and physical examination should give data which are of inestimable value in arriving at a diagnosis, and only those laboratory tests should be employed which will aid in solving the problem in hand. It is an important function of the clinician to decide what aid should be sought from the laboratory. The laboratory should be considered as supplementary to the physical examination. It might be well to state again that "routine is learned much too quickly in the course of practice; and that he who begins to acquire it as a student becomes so accustomed to superficial examination, superficial thinking and superficial treatment, that he is spoiled for all serious and penetrative research into a diseased condition." More and more the laboratories are used in investigation. When they are used for this purpose, and not merely as an aid in the diagnosis by which the treatment is determined, the expenses incurred should be defrayed from an endowment or other fund set aside for the purpose. Patients should not be held financially responsible for tests contributing to general knowledge and not intended to return them as soon as possible to society thoroughly able to care for themselves.

—*D. L.*